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(19) (CA) **CANADIAN PATENT** (12)

(54) Lacrosse Head

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LACROSSE HEAD

Background of the Invention

A variety of lacrosse stick frame members or heads are known for use in lacrosse play all under rules and specifications set forth by the United States Intercollegiate Lacrosse Association Rules Committee. Such lacrosse stick heads are often made in a generally triangular form with straight sidewalls extending along an elongated axis of the head between a transverse head member and throat to provide a ball pocket area of substantially uniformly diminishing width toward the throat portion.

Various methods have been proposed to increase accuracy and velocity of a thrown lacrosse ball. It is known that strictly rectangular four-inch wide frame lacrosse heads used in Canadian lacrosse are particularly accurate in placement of thrown balls. However, restrictions set by the Rules Committee prohibits certain constructions. For example, restrictions include the transversely disposed section of the lacrosse racket frame, commonly referred to as the "head", being required to have an inside dimension of between six and three-quarters and twelve inches. The frame is generally required to have an elongated length of approximately twelve to



1        eighteen inches from the right angle end of the lip to the  
handle. The wall sections are often required not to be over two  
inches from front to back dimension with the net or pocket of  
the stringing having a pocket sag such that the top surface of a  
5        lacrosse ball placed in the pocket will not drop below the  
bottom edge of the sidewalls with the ball itself having a  
circumference of between about seven and three-quarters inch and  
eight inches with a weight of from about five ounces to five and  
a half ounces and a diameter of about one and three-quarter  
10      inch.

      Restrictions on frame design have been a major  
reason in limiting the velocity and accuracy of balls thrown  
from frames.

Summary of the Invention

15        According to the invention a lacrosse stick frame  
encircles a net area and extends along a central elongated  
axis. A lip member extends transverse to the central axis and a  
throat is positioned opposite to the lip member. First and  
second opposed sidewall members extend between the lip and  
20      throat to form the encircling frame. The first and second  
sidewall members define therebetween a first area having a first  
width and second area positioned toward said throat and having a  
width less than said first width with the second width being  
selected to snugly receive a lacrosse ball therebetween so as to  
25      permit positive positioning of the ball with respect to the  
sidewall members. This positive positioning at an area between  
the sidewalls substantially only millimeters wider than the ball  
itself improves the throwing characteristics of the ball so as  
to improve velocity and accuracy of thrown balls thrown from the  
30      frame.

      Preferably the sidewall members are pinched in  
toward each other to form the first and second areas.

      In the preferred form, tabs are provided for  
locating the stringing and extend substantially in a plane at

1 the back of the frame.

5 Preferably the throat provides a single hole on either side of the stick attachment to the throat with outer leather thongs of the netting being located in these holes and  
5 the inner leather thongs being wrapped around the head to provide for increased tension on the outer thongs to result in a pocket that aids in propelling the ball with greater velocity.

10 It is an object of this invention to provide a lacrosse stick frame which enhances throwing characteristics of lacrosse balls thrown from the frame.

15 It is another object of this invention to provide a frame in accordance with the preceding object having pinched in sidewall members providing an area closely surrounding sides of a lacrosse ball held within the frame for propelling the ball at enhanced velocity with high accuracy.

20 Still another object of this invention is to provide a lacrosse stick frame in accordance with the preceding objects which can be formed with dimensions of overall length and width not exceeding previously acceptable dimensions.

25 It is a feature of this invention that the sidewall construction provides a substantially conventional lacrosse stick head with an improvement requiring only a portion of the head to be modified. That modified portion provides lateral support and positioning to a lacrosse stick ball thereby enhancing the velocity and accuracy with which the ball can be propelled from a lacrosse stick by the user.

Brief Description of the Drawings

30 The above and other objects, features and advantages of the present invention will be better understood from a reading of the following specification in conjunction with the drawings in which:

FIG. 1 is a front view of lacrosse stick head with attached handle in accordance with a preferred embodiment of the present invention;

1 FIG. 2 is a right side view thereof through line 2-2;  
FIG. 3 is an enlarged front view thereof; and  
FIG. 4 is a cross sectional view taken through line 4-4 of  
FIG. 3; and,

5 FIG. 5 is a cross sectional view taken through line 5-5 of  
FIG. 4.

Description of Preferred Embodiments

With reference now to the drawings, a preferred embodiment of  
a lacrosse stick is shown generally at 10 having an improved  
10 encircling frame of this invention illustrated generally at 11.  
The frame has a lip member 12 transverse to an elongated axis 13 of  
the encircling frame. A throat portion 14 is opposite to the lip  
member 12. First and second opposed sidewall members 15 and 16  
extend between the lip and throat to form the encircling frame.

15 The material of the frame member can be any known lacrosse  
racket frame materials including wood and polymer materials.  
Preferably ionomer polymers such as Surlyn A, manufactured by E.I.  
DuPont de Nemours Co., Inc. of Wilmington, Delaware or other such  
tough resilient polymeric material is used. The frame is  
20 preferably integral and forms a continuous encirclement for the  
netting or lacing 20 which is mounted within the frame.

A conventional lacrosse stick handle 21 can be mounted within  
the butt end of throat 14 as known in the art.

25 The overall dimensions of the frame are preferably within the  
Lacrosse Rules Committee requirements. Thus the frame preferably  
has an elongated length of approximately twelve inches. The wall  
sections are approximately one and three-quarters inches from front  
surface 30 to rear surface 31. The transverse lip or head member  
12 has a transverse inside dimension of about six and  
30 three-quarters inches.

The lip transverse member 12 is preferably tilted slightly to  
the rear as best shown in FIGS. 2 and 4. The lip is preferably  
provided with a plurality of holes 22 and inwardly directing sets

1 of tabs 23, 24, 33, 35 and 34, 36, for mounting the netting 20. The sidewalls 15 and 16 extend from the lip end to the throat as is customary but are pinched in as at portions 31 and 32 to provide an area below locking tabs 33-36 which is restricted in transverse dimension as will be described.

5 The locking tabs 33-36 extend inwardly and act to provide mountings for locating the pocket of the lacrosse stick frame. These tabs can be as described in United States Patent 4,138,111 issued February 6, 1979. Preferably the locking tabs extend only at the upper end of the frame which defines a first area 10 wider than the second area below the locking tabs toward the throat. In some cases, the locking tabs can be eliminated while the advantages of the pinched in sidewalls can still be obtained.

15 The throat portion of the frame enables mounting of the handle or stick 21 in a conventional recess with a locking screw as known in the art. The netting is mounted about the throat and preferably through two holes 37 and 38. This differs from the standard prior art where a plurality of holes are used on 20 either side of the handle extending along the handle axis with the stringing being mounted in those holes. The differences will be described with respect to the netting.

25 By using only one hole on either side of the throat portion, that portion can be abbreviated in axial length. Thus the hand of the user can grip the head closer to the ball rest position at the base of the throat. As best seen in FIG. 3 the ball 60 rests in the ball stop 45 at the base of the throat and substantially at the throat end 61. This throat end 61 is 30 preferably located so that the hand can grip the handle and throat in a plane shown by the dotted line 62 preferably no more than one inch from point 61. Since the hand can grip the head close to the end of the throat section as far up as at least point 61, better control of the frame can be obtained. The hand essentially grips the frame close to where the ball rests in the

1      normal upright position of the frame. Thus use of a single hole  
on each side and elimination of frame outwardly extending wing  
materials below line 62 is helpful for enabling the hand to grip  
the frame firmly close to where the ball rests and thus obtain  
5      better ball control during handling of the head and ball.  
Preferably the frame portion below line 62 has a circumference  
such that the hand can comfortably and firmly wrap itself around  
the frame and control the ball. This circumference is  
preferably no more than five inches. Perimeters greater than  
10     this can strain the grip of the hand and thus the hand can no  
longer provide control in ordinary action. Of course hand size  
will vary and thus the perimeter preferably lies in a range of  
from four to five inches for normal usage.

15     The netting 20 can be conventional and of rawhide netting  
or stringing as known in the art. The netting described in U.S.  
Patent 4,138,111 for example can be used.

20     In the preferred embodiment, four elongated rawhide lacing  
strips 40, 41, 42 and 43 are used. Only the laces 40 and 43 are  
mounted in the holes 37 and 38 respectively. The inner laces 41  
and 42 or more if more are used are wrapped about the throat as  
in a loop shown at 44.

25     This mounting of the vertically extending lacing which  
extends substantially parallel to the central axis 13 of the  
frame, is desirable to enable one to increase the tension on the  
outer laces or thongs resulting in a pocket that helps to propel  
the ball more accurately and with greater velocity. Thus the  
tension in the outer thongs 40 and 43 is preferably greater than  
the tension with which the inner thongs such as 41 and 42 are  
mounted. This feature of tensioning aids the primary feature of  
30     the present invention but conventional mounting of the thongs  
can be carried out while still obtaining the advantages of the  
pinched in sidewall of this invention. For example in certain  
cases two or more axially aligned thong mounting holes are used  
on each side of the stick and the distance between 61 and 62 is

1 greater than five inches.

5 Turning now to the pinched in sidewall construction 15 and 16, it has long been known that accuracy and velocity of a thrown lacrosse ball is achieved by having a throwing area that 10 allows a minimum of lateral (left to right) movement of the ball so that the ball is propelled straight up and out of the pocket. Any slippage sideways in the pocket can result in diminished velocity and accuracy as the ball veers left, right, up or down depending on the throwing motion. However, it has 15 been difficult to achieve the desired pocket size staying within the guidelines of the Rules Committee and pre-existing lacrosse stick designs.

15 This has now been accomplished by the use of pinched in sidewalls 15 and 16. In effect there is an area covering up to sixty percent of the axial length of the frame extending up from the throat and preferably from twenty to forty percent, where the sidewalls effectively form a generally rectangular inner area having a sidewall to sidewall inner dimension only a few millimeters, such as two millimeters, on either side of a ball 20 which is used. Thus the ball which may be caught and initially held in a pocket located in the upper area of the frame as shown in FIG. 1, may drop down onto a conventional resilient ball stop strip 45 and be maintained between two essentially laterally opposed sidewall portions only spaced a few millimeters from the 25 ball. The ball stop strip 45 is considered a portion of the sidewall inner surface in this discussion of spacing. This greatly adds to the ability to throw a ball with high velocity and accuracy from the frame of this invention.

30 In effect one obtains a generally rectangular lower portion where the substantially rectangular sidewalls at the lower portion closely surround the ball. The actual spacing of the ball from the sidewalls in the upright carrying position shown in FIG. 3 can vary a few millimeters. Some spacing is preferred but any narrowing of the lower portion beyond that

1 provided by a uniform taper of the sidewalls is preferred.

5 The netting 20 and the pocket formed is best shown in FIGS. 1 and 2 with the mounting of the netting being accomplished through the thong holes mounting thongs 40-43 and side mounting accomplished through holes such as 50, 52 and 54 in each sidewall. The locking tabs 33-36 also act to provide for accuracy in throwing if the ball is propelled from the first or upper area of the frame.

10 In use, the ball is caught in the upper area of the frame and maneuvered to the lower area as best shown in FIG. 3. The width of the catching area remains as in a conventional head. The ball can then be accurately propelled since it is closely held within the sidewalls.

15 The sidewalls 15 and 16 are shown generally pinched in or curved slightly. That curve can be in the form of a more drastic curve or other stepped positions formed in the sidewall equivalent to the pinching in of the sidewalls. In all cases, it is desired to provide for close spacing between the sidewalls just barely allowing the ball to clear the sidewalls when being 20 propelled.

While the specific embodiment of this invention has been shown and described, it should be understood that various arrangements can be made.

25 According to the method of this invention a lacrosse stick ball is caught within the frame of this invention positioned in the second area so that its lateral movement is restricted to millimeters in a direction transverse to the long axis of the ball and then propelled from the lacrosse stick in a normal swinging propelling movement of the lacrosse stick. Because of 30 the restricted lateral movement of the ball by the lower sidewall portions, velocity and accuracy of the ball is substantially enhanced.

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The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

- 1        1. A lacrosse stick solid frame comprising said frame being elongated, encircling a net and extending along a central elongated axis,  
5                a lip member transverse to said central axis and a throat positioned opposite to said lip member,  
              first and second opposed sidewall members extending between said head and throat to form said encircling frame,  
10                said first and second sidewall members defining therebetween a first area having a first width and a second area positioned toward said throat and having a width less than said first width,  
              said second width being selected to snugly receive a lacrosse ball therebetween so as to permit  
15                positive positioning of said ball with respect to said sidewall member and allow improved accuracy and velocity of lacrosse balls thrown from said frame.
  
- 1        2. A lacrosse stick solid frame in accordance with claim 1 wherein said sidewall members are pinched in toward each other to form said first and second areas with said second area extending from said throat for from 20 to 60 percent of the axial length of said frame.
  
- 1        3. A lacrosse stick solid frame in accordance with claim 2 wherein said lip member has a greater transverse dimension than said throat.

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4. A lacrosse stick solid frame in accordance with claim 1, and further including said frame member carrying a plurality of inwardly extending lacing tabs for providing lacing supports.

5. A lacrosse stick solid frame in accordance with claim 1, and further comprising said throat carrying two thong receiving holes mounted for receiving outermost thongs positioned in a net carried by said frame.

6. A lacrosse stick solid frame in accordance with claim 2, and further including:

    said head carrying a plurality of inwardly extending lacing tabs for providing lacing supports, and a plurality of thong mounting holes at said throat for mounting two outer thongs of a net carried within said head.

7. A lacrosse stick solid frame in accordance with claim 1, wherein said frame carries a net having at least four elongated thongs supporting said net,

    said thongs extending from head to throat with two outermost thongs having a higher tension than the innermost thongs and being mounted in holes provided in said throat and with innermost thongs wrapped about said throat.

8. A lacrosse stick solid frame in accordance with claim 2, and further comprising said lacrosse stick throat having a throat bottom point spaced from a bottom end of said frame along said axis,

    said spacing along said axis at all points beyond one inch from said throat bottom being designed to enable the hand of a user to closely grip the head to obtain greater control of the head during handling and throwing of balls within the head.

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9. A lacrosse stick head in accordance with claim 8, wherein all points beyond said one inch define a perimeter no greater than five inches.

10. A lacrosse stick frame in accordance with claim 9, wherein said perimeter is from four to five inches.

11. In a lacrosse stick solid head, the improvement comprising providing pinched together sidewalls in a lacrosse frame,

said pinched together sidewalls defining an elongated generally rectangular net area of restricted transverse dimension extending for at least 20% of the axial length of said frame but less than the whole length thereof whereby a ball may be held within said rectangular area substantially adjacent the pinched together sidewall portions and propelled along the axis of said frame with minimized lateral movement as the ball is passed out of said frame in an axial direction.

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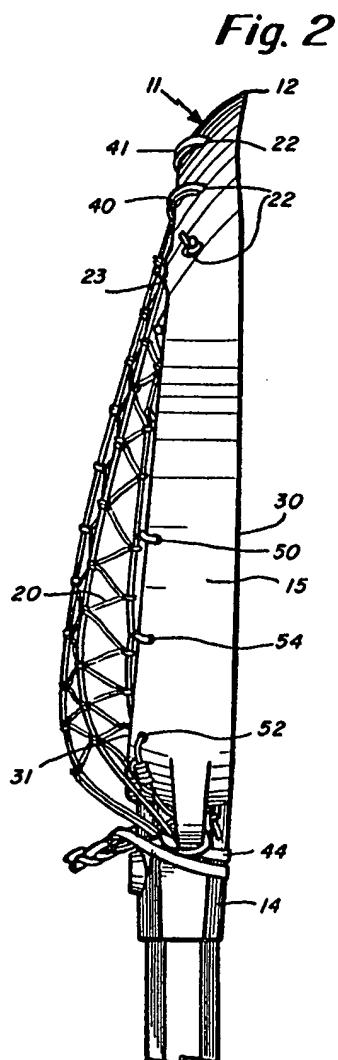
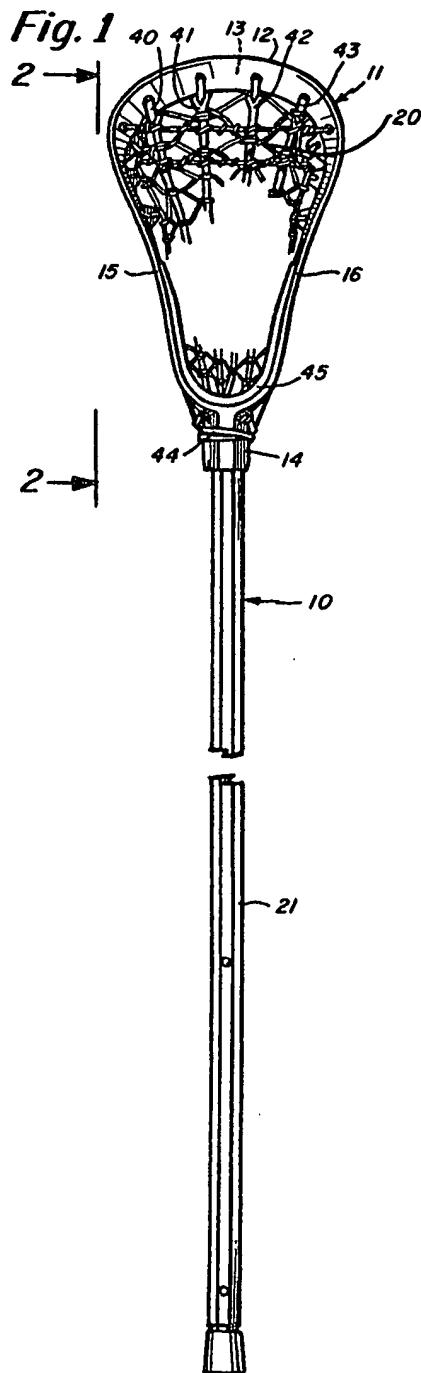
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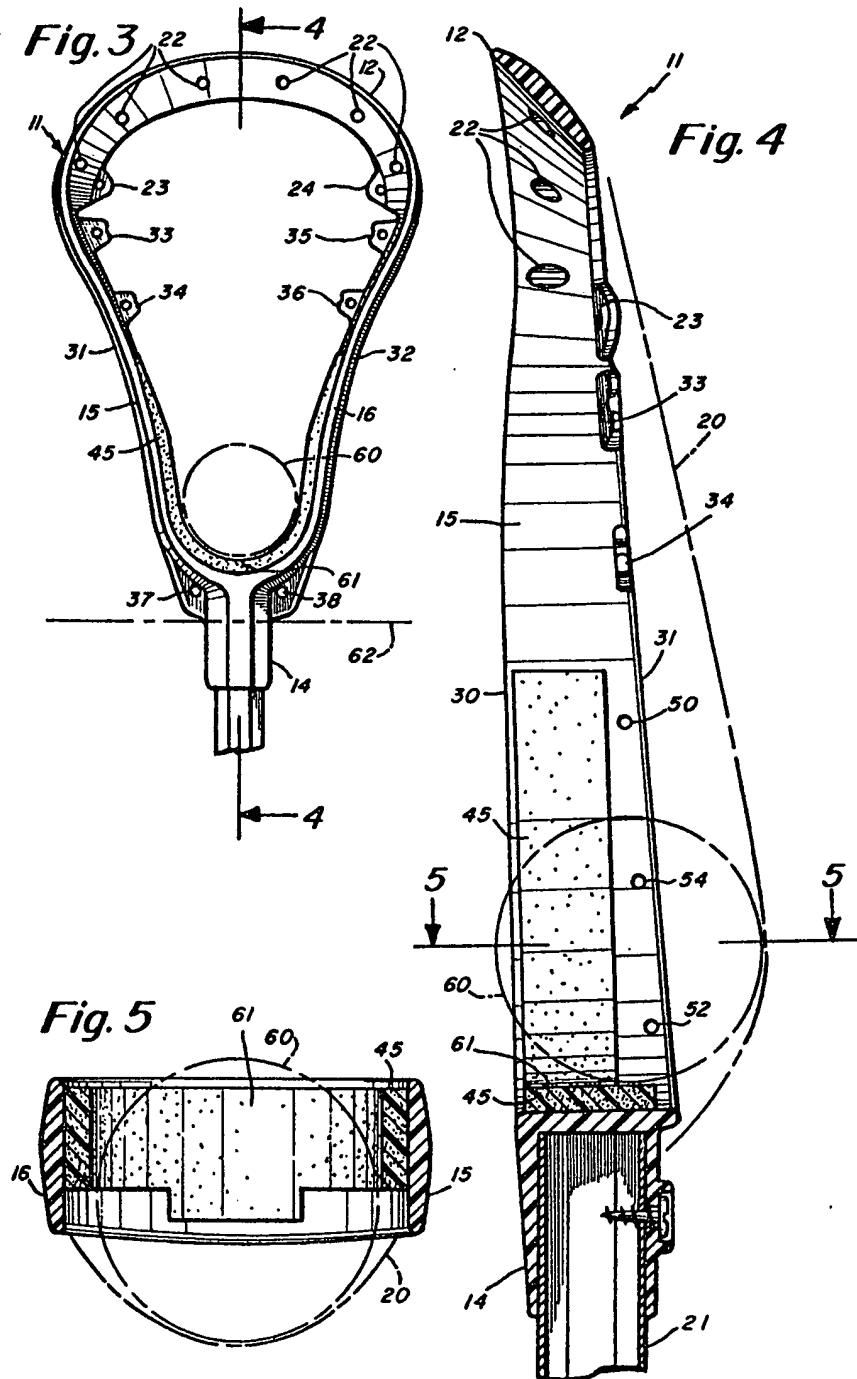
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